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EXAMINER	
UNGAR, SUSAN NMN	

ART UNIT	PAPER NUMBER
1642	

DATE MAILED: 05/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/961,086	ROSS ET AL.	
	Examiner	Art Unit	
	Susan Ungar	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *11 February 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *5-7,12-15,18 and 21-39* is/are pending in the application.

4a) Of the above claim(s) *12-15,18 and 21-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *5-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/26/02, 2/20/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The Election filed February 11, 2004 in response to the Office Action mailed January 2, 2004 is acknowledged and has been entered. Claims 5, 12-15 and 18 have been amended and new claims 21-22 have been added. It is noted that claims 21-22 have been renumbered as claims 38-39 per 37 CFR 1.126. Claims 5-7, 12-15, 18 and 21-39 are currently pending and claims 12-15, 18 and 21-39 have been withdrawn from further consideration by the examiner under 37 CFR 1.142(b) as being drawn to non-elected inventions. It is noted that newly added claim 38 is drawn to the subject matter of Group 4 and is hereby joined to Group 4. It is further noted that newly added claim 39 is drawn to the subject matter of Group 5 and is hereby joined to Group 5. Claims 5-7 drawn to an antibody that binds to a Breast Cancer Resistance Protein, are currently under prosecution.

2. The response to the restriction requirement of January 2, 2004 has been received. Applicant has elected Group 1, Claims 5-7 for examination with traverse. The traversal is on the ground(s) that examination of all groups would not impose a serious burden on the examiner since the antibodies of Group 1 could be used in the methods of the other groups. This is not found persuasive because the literature search, particularly relevant in this art, is not coextensive and different searches and issues are involved in the examination of each group. For these reasons the restriction requirement is deemed to be proper and is therefore made FINAL.

Specification

3. The specification on page 1 should be amended to disclose the parent applications and to reflect the status of the those applications. Further, when claiming benefit of a provisional application the appropriate form is as follows:

"This application claims benefit to provision application **********, filed **, now abandoned.

Appropriate correction is required.

Drawings

4 The drawings are objected to because of the following informalities: The figures contain sequences, but the sequences are not identified by SEQ ID NO:s. The objection can be obviated by amending either the Figures containing the sequences or the Brief Description of those sequences to identify the SEQ ID NO: of each sequence that is disclosed in the Figures.

5. The use of the trademarks such as "CapFinder" disclosed on page 23 of the specification has been noted in this application. These should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Each letter of the trademarks must be capitalized. See MPEP 608.01(V) and Appendix I.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention."

7. It is noted that, for the reasons set forth below, claims 5-7 are indefinite under 35 USC 112, second paragraph in the recitation of "fragments or derivatives thereof". A review of the specification suggest that the fragment and derivative language is drawn to a Breast Cancer Resistance Protein and therefore, in the interests of compact prosecution, it will be assumed for examination purposes that the limitations are drawn to the protein and the rejection below will be addressed only to resistance protein.

8. Claims 5-7 are rejected under 35 USC 112, first paragraph because the specification, while enabling for antibody to a Breast Cancer Resistance Protein or BCRP, SEQ ID NO:1, does not reasonably provide enablement for an antibody to a derivative of a Breast Cancer Resistance Protein. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

The claims are drawn to an antibody which binds to derivatives of a breast cancer resistance protein which induces resistance to cancer chemotherapeutic drugs. It is noted that the derivatives thereof are not required to induce resistance to cancer therapeutic drugs. This means that the claims are drawn to a whole universe of molecules that would be expected to have neither structural nor functional identity with a Breast Cancer Resistance Protein or BCRP, SEQ ID NO:1.

The specification teaches that the invention is drawn to functional derivatives of BCRP (p. 7) wherein functional derivatives possess a biological activity (undefined) that is either functional or structural that is substantially similar to a biological activity of BCRP (p. 8). Although the specification further teaches that a molecule is said to be substantially similar to another molecule if

both molecules have substantially similar structures or if both molecules possess a similar biological activity (p. 8), it is noted that the term "substantially" is not defined. Structural identity is clearly not required (see p. 8). The specification teaches that the scope of the present invention is intended to include functional derivatives of BCRP which lack one, two or more amino acid residues or which contain altered amino acid residues so long as such derivatives exhibit the capability to influence cell resistance to chemotherapy (p. 9). It is noted that the term "derivative" is not limited to functional derivatives.

One cannot extrapolate the teaching of the specification to the scope of the claims because applicant has not shown that proteins which have been derivatized are capable of functioning as that which is being disclosed. It is pointed out that the term "derivative" encompasses a variety of definitions, i.e. chemical modification, deletions, truncations, substitutions (alterations) etc. Applicant has not enabled all of these types of modified proteins or the antibodies that will bind to those proteins.

Protein chemistry is probably one of the most unpredictable areas of biotechnology. In particular, Bowie et al (Science, 1990, 257:1306-1310) teach that an amino acid sequence encodes a message that determines the shape and function of a protein and that it is the ability of these proteins to fold into unique three-dimensional structures that allows them to function and carry out the instructions of the genome and further teaches that the problem of predicting protein structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein is extremely complex. (col 1, p. 1306). Bowie et al further teach that while it is known that many amino acid substitutions are possible in any given protein, the position within the protein's

sequence where such amino acid substitutions can be made with a reasonable expectation of maintaining function are limited. Certain positions in the sequence are critical to the three dimensional structure/function relationship and these regions can tolerate only conservative substitutions or no substitutions (col 2, p. 1306). Further, replacement of a single lysine reside at position 118 of acidic fibroblast growth factor by glutamic acid led to the substantial loss of heparin binding, receptor binding and biological activity of the protein (Burgess et al. J of Cell Bio. 111:2129-2138, 1990) In transforming growth factor alpha, replacement of aspartic acid at position 47 with alanine or asparagine did not affect biological activity while replacement with serine or glutamic acid sharply reduced the biological activity of the mitogen (Lazar et al. Molecular and Cellular Biology 8:1247-1252 (1988)). These references demonstrate that even a single amino acid substitution or what appears to be an inconsequential chemical modification will often dramatically affect the biological activity and characteristic of a protein. Given the above, it is clear that the scope of the claimed antibodies includes antibodies to molecules which have neither the structure nor the function of the disclosed BCRP or any other breast cancer resistance protein. Applicant has not taught how to make or use antibodies to BCRP derivatives or any other breast cancer resistance proteins. The specification provides insufficient guidance with regard to these issues and provides no working examples which would provide guidance to one skilled in the art and no evidence has been provided which would allow one of skill in the art to predict how to make the claimed antibodies so that they would function as contemplated or how use the broadly claimed antibodies which do not function as contemplated. For the above reasons, it appears that undue experimentation would be required to practice the claimed invention.

9. Claims 5-7 are rejected under 35 USC 112, first paragraph, as lacking an adequate written description in the specification.

Claims 5-7 are drawn to antibodies that bind to a Breast Cancer Resistance Protein and derivatives, fragments. Although drawn to DNA arts, the findings in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997) and Enzo Biochem, Inc. V. Gen-Probe Inc. are relevant to the instant claims. The Federal Circuit addressed the application of the written description requirement to DNA-related inventions in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). The court stated that "[a] written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." Id. At 1567, 43 USPQ2d at 1405. The court also stated that

> a generic statement such as "vertebrate insulin cDNA" or "mammalian insulin cDNA" without more, is not an adequate written description of the genus because it does not distinguish the genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is.

Id. At 1568, 43 USPQ2d at 1406. The court concluded that "naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material." Id.

Finally, the court addressed the manner by which a genus of cDNAs might be described. "A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus." Id.

The Federal Circuit has recently clarified that a DNA molecule can be adequately described without disclosing its complete structure. See Enzo Biochem, Inc. V. Gen-Probe Inc., 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002). The Enzo court adopted the standard that "the written description requirement can be met by 'show[ing] that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics ....i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics. " Id. At 1324, 63 USPQ2d at 1613 (emphasis omitted, bracketed material in original).

The inventions at issue in Lilly and Enzo were DNA constructs per se, the holdings of those cases are also applicable to claims such as those at issue here. A disclosure that does not adequately describe a Breast Cancer Resistance Protein, derivatives or fragments thereof cannot adequately describe the antibodies that bind to said protein, derivatives or fragments thereof.

Thus, the instant specification may provide an adequate written description of a Breast Cancer Resistance Protein, derivatives or fragments thereof, per Lilly by structurally describing a representative number of Breast Cancer Resistance Proteins, derivatives or fragments thereof or by describing "structural features

common to the members of the genus, which features constitute a substantial portion of the genus." Alternatively, per Enzo, the specification can show that the claimed invention is complete "by disclosure of sufficiently detailed, relevant identifying characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics."

In this case, the specification does not describe a Breast Cancer Resistance Protein, derivatives or fragments thereof in a manner that satisfies either the Lilly or Enzo standards. The specification does not provide the complete structure of any Breast Cancer Resistance Protein, derivatives or fragments thereof other than BCRP, SEQ ID NO:1, nor does the specification provide any partial structure of such a Breast Cancer Resistance Protein, derivatives or fragments thereof, nor any physical or chemical characteristics of a Breast Cancer Resistance Protein, derivatives or fragments thereof nor any functional characteristics coupled with a known or disclosed correlation between structure and function. Although the specification discloses SEQ ID NO:1 and the well known P-glycoprotein (Pgp) and multidrug resistance protein (MRP), this does not provide a description of a Breast Cancer Resistance Protein, derivatives or fragments thereof that would satisfy the standard set out in Enzo.

The specification also fails to describe a Breast Cancer Resistance Protein, derivatives or fragments thereof by the test set out in Lilly. The specification describes only SEQ ID NO:1 and the well known P-glycoprotein (Pgp) and multidrug resistance protein (MRP). Therefore, it necessarily fails to describe a "representative number" of such species. In addition, the specification also does

not describe "structural features common to the members of the genus, which features constitute a substantial portion of the genus."

Thus, the specification does not provide an adequate written description of a Breast Cancer Resistance Protein, derivatives or fragments thereof that is required to practice the claimed invention. Since the specification fails to adequately describe a Breast Cancer Resistance Protein, derivatives or fragments thereof, it also fails to adequately describe the antibody which binds to said Breast Cancer Resistance Protein, derivatives or fragments thereof.

10. Claims 5-7 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5-7 are indefinite because Claim 5 recites the limitation "An antibody which binds to a Breast Cancer Resistance Protein which protein induces resistance to cancer chemotherapeutic drugs, or fragments or derivatives thereof". The claims are confusing because it is unclear whether the fragments or derivatives thereof are meant to refer to the antibody, a breast cancer resistance protein or to cancer chemotherapeutic drugs.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 5-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Filipits et al (Clinical Cancer Research, 1996, 2:1231-1237) or Dexter et al (Proc. AACR, 1996, 37:A2138).

It is noted that although the specification teaches BCRP, Breast Cancer Resistance-associated Protein (p. 7), and that "the BCRP is about 655 amino acids and is encoded by a gene which has about 2418 nucleotides (p. 3 of the specification), the specification does not define "a Breast Cancer Resistance Protein" as claimed, therefore, it is assumed for examination purposes that a Breast Cancer Resistance Protein is any protein found in cancerous breast tissue that induces resistance to cancer therapeutic drugs. Further, it is noted that the specification defines a functional derivative of BCRP as a compound which possesses a biological activity (either functional or structural) that is substantially similar to a biological activity of BCRP and functional derivatives are intended to include fragments, variants, analogues, chemical derivatives of a molecule and a functional fragment means that a molecule with similar but not identical amino acid sequence but has the same function as the full length BCRP (p. 8). Thus it is clear for examination purposes, because MDR1, P-glycoprotein and MRP are all well known and well characterized breast cancer resistance proteins, that they are therefore functional derivatives, functional fragments and therefore are both derivatives and fragments of the BCRP, SEQ ID NO:1, disclosed in the instant specification.

The claims are drawn to a monoclonal antibody that binds to a breast cancer resistance protein which protein induces resistance to cancer chemotherapeutic drugs or fragments or derivatives thereof.

Filipits et al teach monoclonal antibodies QCRL-1 and QCRL-3 which both recognize MRP whose expression was observed in all breast cancer specimens assayed and teaches monoclonal antibody C219 which recognizes P-glycoprotien in breast cancer specimens, both of which are breast cancer resistance proteins which induce resistance to cancer chemotherapeutic drugs.

Dexter et al teach monoclonal antibodies C219, JSB1, MRK16, UIC2 which recognize MDR1 expression in breast cancer samples and monoclonal antibodies QCRL1 and MRPm6 which recognize MRP expression in breast cancer samples, both of which are breast cancer resistance proteins which induce resistance to cancer chemotherapeutic drugs.

All of the limitations of the claims are met.

13. Claims 5 and 7 are rejected under 35 U.S.C. § 102(b) as being anticipated by Nakagawa et al (Cancer Research, 2992, 52:6175-6181).

It is noted that although the specification teaches BCRP, Breast Cancer Resistance-associated Protein (p. 7), and that "the BCRP is about 655 amino acids and is encoded by a gene which has about 2418 nucleotides (p. 3 of the specification), the specification does not define "a Breast Cancer Resistance Protein" as claimed, therefore, it is assumed for examination purposes that a Breast Cancer Resistance Protein is any protein found in cancerous breast tissue that induces resistance to cancer therapeutic drugs. Further, it is noted that the specification defines a functional derivative of BCRP as a compound which possesses a biological activity (either functional or structural) that is substantially similar to a biological activity of BCRP and functional derivatives are intended to include fragments, variants, analogues, chemical derivatives of a molecule and a

functional fragment means that a molecule with similar but not identical amino acid sequence but has the same function as the full length BCRP (p. 8). Thus it is clear for examination purposes, because MDR1, P-glycoprotein and MRP are all well known and well characterized breast cancer resistance proteins, that they are therefore functional derivatives, functional fragments and therefore are both derivatives and fragments of the BCRP, SEQ ID NO:1, disclosed in the instant specification.

The claims are drawn to a polyclonal antibody that binds to a breast cancer resistance protein which protein induces resistance to cancer chemotherapeutic drugs or fragments or derivatives thereof.

Nakagawa et al teach polyclonal antibodies, ASP-14, which binds to P-glycoprotein whose expression was observed in breast cancer cell specimens assayed (see p. 6178, col 2 and Fig 5, p. 6179). P-glycoprotein is a breast cancer resistance proteins which induces resistance to cancer chemotherapeutic drugs.

All of the limitations of the claims are met.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made. Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the

invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

15. Claims 5 and 7 are rejected under 35 U.S.C. § 103 as being unpatentable over Filipits et al, *Supra,* or Dexter et al, *Supra,* in view of Harlow et al (Antibodies, a Laboratory Manual, Cold Spring Harbor Laboratory Press, 1988, p. 142)

It is noted that although the specification teaches BCRP, Breast Cancer Resistance-associated Protein (p. 7), and that "the BRCP is about 655 amino acids and is encoded by a gene which has about 2418 nucleotides) (p. 3 of the specification), the specification does not define "a Breast Cancer Resistance Protein" as claimed, therefore, it is assumed for examination purposes that a Breast Cancer Resistance Protein is any protein found in cancerous breast tissue that induces resistance to cancer therapeutic drugs. Further, it is noted that the specification defines a functional derivative of BCRP as a compound which possesses a biological activity (either functional or structural) that is substantially similar to a biological activity of BCRP and functional derivatives are intended to include fragments, variants, analogues, chemical derivatives of a molecule and a functional fragment means that a molecule with similar but not identical amino acid sequence but has the same function as the full length BCRP (p. 8). Thus it is

clear for examination purposes, because MDR1, P-glycoprotein and MRP are all known breast cancer resistance proteins, that they are therefore functional derivatives, functional fragments, therefore both derivatives and fragments of the BCRP disclosed in the instant specification.

The claims are drawn to polyclonal antibody which binds to a breast cancer resistance protein which protein induces resistance to cancer chemotherapeutic drugs or fragments or derivatives thereof.

Filipits et al or Dexter et al, teach as set forth above but do not teach polyclonal antibody to either the isolated MDR1 or the isolated MRP.

Harlow et al teach that monoclonal antibodies are often more time-consuming and costly to prepare and they are not necessarily the best choice for certain immunochemical techniques. Although in theory, monoclonal antibodies can be used for all of the tasks that require or benefit from the use of polyclonal antibodies, in practice, producing exactly the right set of monoclonal antibodies is often a difficult and laborious job (p. 142). The reference teaches specifically immunochemical techniques for which polyclonal antibodies are usually good including cell staining, immunoprecipitation and immunoblots (see Table 6.1, p. 142).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have produced antibodies to the well known breast cancer resistance protein antigens of either Dexter et al or Filipits et al because the Board of Patent Appeals and interferences has taken the position that once an antigen has been isolated, the manufacture of antibodies, which include polyclonal antibodies against it is *prima facie* obvious. See Ex parte Ehrlich, 3 USPQ 2d 1011 (PTO Bd. Pat. APP. & Int. 1987), Ex parte Sugimoto, 14 USPQ 2d

1312 (PTO Bd. Pat. APp. & Int. 1990). Further, it would have been prima facie obvious and one would have been motivated to produce polyclonal antibodies to the well known breast cancer resistance protein antigens of either Dexter et al or Filipits et al because Harlow et al specifically teach that monoclonal antibodies are often more time-consuming and costly to prepare and they are not necessarily the best choice for certain immunochemical techniques. Although in theory, monoclonal antibodies can be used for all of the tasks that require or benefit from the use of polyclonal antibodies, in practice, producing exactly the right set of monoclonal antibodies is often a difficult and laborious job and polyclonal antibodies are useful for cell staining, immunoprecipitation and immunoblot techniques. Given the conventional nature of the production of polyclonal antibodies at the time the invention was made, one would have had a reasonable expectation of successfully producing antibodies to a breast cancer resistance protein.

16. Please Note that the Information Disclosure Statement submitted on September 21, 2001 has not been signed because the references cited appear not to have been submitted and were not found in the file.

17. No claims allowed.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Ungar, PhD whose telephone number is (571) 272-0837. The examiner can normally be reached on Monday through Friday from 7:30am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvette Eyler, can be reached at 571-272-0871 The fax phone number for this Art Unit is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Effective, February 7, 1998, the Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit 1642.

Susan Ungar
Primary Patent Examiner
March 25, 2004